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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,386	10/07/2003	Mahito Shinohara	03500.017619.	4249

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER
EGAN, SCOTT T

ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
06/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/679,386	**Applicant(s)** SHINOHARA, MAHITO	
	Examiner Scott Egan	**Art Unit** 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☑ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

U.S. Patent and Trademark Office
PTOL-326 (Rev. 08-06) **Office Action Summary** Part of Paper No./Mail Date 20070516

DETAILED ACTION

Drawings

1. Figures 5-7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 1-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto (US 6,734,906) in view of Yoneyama (JP 03-013705).

Consider **claim 1**, Hashimoto et al. explicitly teach:

A solid-state image pickup apparatus (fig. 15) including an array of a plurality of unit cells (S, fig. 15), each of the unit cells including a plurality of photoelectric conversion elements (photoelectric conversion portions a11, a12, a21, a22, fig. 15) for converting an photo-signal to signal charge and storing the signal charge and one amplification element (A1, fig. 15) for receiving signal charge of each of the photoelectric conversion elements and outputting a signal corresponding to the signal charge (output signals of the photoelectric conversion portions are output via the common amplifier A1, column 9, lines 12-13), comprising:

a readout circuit system connected to an output line of the amplification element (combination of horizontal output lines, amplifier 10, AGC 11, and A/D converter 12, fig. 15), for inputting thereto a signal output from the unit cell via the output line, wherein the readout circuit system comprises difference means (subtracting amplifier 10, fig. 15) for inputting thereto a first signal corresponding to a reset level of an input portion of the amplification element (the noise signal after resetting which is stored in capacitor CN), a second signal corresponding to the first signal to which a signal corresponding to signal charge stored in at least one of the plurality of photoelectric conversion elements is added (signals of the photoelectric conversion portions are output via the common amplifier A1 and stored in signal storage capacitor CS, this signal represents the signal from the photoelectric conversion portion plus noise) and operating a difference (subtracting amplifier 10 subtracts the CN, or reset level, from the CS in order to get the signal without noise, for a more detailed description see column 9, lines 4-37).

However, Hashimoto does not explicitly teach a third signal corresponding to the second signal to which a signal corresponding to signal charge stored in at least one of the plurality of photoelectric conversion elements is added (The examiner understands the improvement on the prior art according to figure 2, in that multiple photoelectric conversion element signals are added together before a second reset in order to save time, however this is not made clear in this section of the claim, therefore the examiner's interpretation is as follows).

In the same field of endeavor, Yoneyama teaches an image pickup device with high dynamic range. Yoneyama further teaches that multiple exposures take place before a reset is performed, since different pixels will receive different amounts of light on a sensor. The signal values are continuously added until each reaches a certain level, which is interpreted as the third signal in that is would be the rest level, added to the first signal, added to the second signal (for a more detailed description see paragraph [0013]-[0014] and figure 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the continuous storage of signals before a second reset found in Yoneyama into the image pickup apparatus found in Hashimoto in order to obtain a higher dynamic range.

Consider **claim 2**, the combination of Hashimoto in view of Yoneyama further teaches the solid-state image pickup apparatus according to claim 1, wherein the difference means operates a difference between the first signal and the second signal, and a difference between the second signal and the third signal (differential amplifier 10, performs the difference between any two signals that are applied to it, any combination of the signals is inherent).

Consider **claim 3**, the combination of Hashimoto in view of Yoneyama further teaches the solid-state image pickup apparatus according to claim 1, wherein the difference means operates a difference between the first signal and the second signal, and a difference between the first signal and the third signal (differential amplifier 10, performs the difference between any two signals that are applied to it, any combination of the signals is inherent).

Consider **claim 4**, the combination of Hashimoto in view of Yoneyama further teaches the solid-state image pickup apparatus according to claim 1, wherein the amplification element (subtracting amplifier 10) is an amplification transistor,

wherein the unit cell further comprises transfer means connected between a control electrode of the amplification transistor and the photoelectric conversion elements (fig 15 shows that the there are transfer means between the photoelectric conversion portions and the subtracting amplifier 10), and

wherein signal charge stored in each of the photoelectric conversion elements is transferred to the control electrode of the amplification transistor via the transfer means (fig 15 shows that the there are transfer means between the photoelectric conversion portions and the subtracting amplifier 10) (applicant also admits in figure 7 that this configuration is know in the art).

However, the combination of Hashimoto in view of Yoneyama does not explicitly teach that the amplifier is a transistor.

Official Notice that both the concept and the advantages of using an amplifying transistor are well known and excepted in the art. It would have been obvious to have included the transistor as the amplifier in the combination of Hashimoto in view of Yoneyama in order to save space and be more cost efficient.

Consider **claim 5**, the combination of Hashimoto in view of Yoneyama further teaches an image pickup system comprising the solid-state image pickup apparatus according to claim 1, an optical system for focusing light onto the solid-state image pickup apparatus, and a signal processing circuit for processing an output signal from the solid-state image pickup apparatus (fig 20 and column 11, lines 39-52).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hashimoto (US 9,56,605) teaches an image pickup apparatus with a plurality of unit cells, whose output are sent to an addition circuit which adds together the plurality of signals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Egan whose telephone number is (571) 270-1452. The examiner can normally be reached on Monday-Friday 8:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SE

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER